

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figure 16. These sheets replace the original sheet including Figure 16. In Figure 16, the previously omitted sequence alignment between Mi1.1 (SEQ ID NO: 7), Mi1.2 (SEQ ID NO: 9), and Rpi-blb2 (SEQ ID NO: 1) has been added.

Attachment: Replacement sheets (12)
Annotated Sheet Showing Changes (12)

REMARKS

Applicants thank the Examiner for the helpful telephone discussion of May 10, 2007. Applicants also thank the Examiner for withdrawing the restriction between the amino acid sequences of SEQ ID NOs: 2 and 4, and between the nucleotide sequences of SEQ ID NOs: 3, 5, and 6.

After entry of this amendment, claims 1, 3-32, and 34-46 are pending, of which claims 8-32, 34-38, and 40-43 are withdrawn. New claims 44 and 45 have been added and find support in the original claims 5 and 6, respectively. New claim 46 has been added and finds support in the original claims 2 and 39 and in the specification at page 51, line 37 to page 52, line 6, and page 93, lines 14-16. Claim 2 has been cancelled without prejudice or disclaimer. The claims have been amended without prejudice or disclaimer to delete the non-elected subject matter, to correct the antecedent basis, and to address the various points made in the Official Action. The amended claims find support *inter alia* in the original claims. Further support for the amended claims 1 and 8 is found in the original claims 2 and 8, respectively, and in the specification at page 15, line 32 through page 16, line 24, and at page 93, lines 14-16. No new matter has been added.

In the specification, pages 6, 19, and 71 have been amended to delete the hyperlinks. Additionally, the sequence recited in the specification at page 92 not appearing in the Sequence Listing has been added to the Sequence Listing attached hereto. No new matter has been added. The corresponding sequence identifying numbers have also been added to the specification to comply with 37 CFR § 1.821(a) and (d). Applicants submit herewith replacement copies of the Sequence Listing (COPY 1 and COPY 2) that conform to 37 CFR §§ 1.821-1.825 and the Sequence Listing in computer readable form, all on compact disc, accompanied by a Statement to Support Filing and Submission in Accordance with 37 CFR §§ 1.821-1.825. The specification has also been amended to replace the required paragraph for submission of Sequence Listing only on compact disc. No new matter has been added to the Sequence Listing or the specification. Entry of this Sequence Listing into the application is respectfully requested.

Objections To The Specification

The Examiner objects to the embedded hyperlinks. The specification has been amended to delete the hyperlinks. It is noted that the information referenced in the hyperlinks is available in the art and is referenced in the articles cited in the specification.

The Examiner further objects to Figures 13 A-D, 14, 15 and 17, Tables 3A and 3B, and the specification at page 92, line 35 for lack of sequence identifying numbers. Applicants respectfully submit that the objection to the Figures and Tables is moot because the required sequence identifying numbers have been previously added to the sequences presented in these Figures and Tables by way of Preliminary Amendment filed on February 10, 2006. Applicants further submit that the objection to page 92 of the specification is rendered moot in view of the present amendment.

The Examiner also objects to Figure 16 for lack of the sequence alignment. Applicants submit herewith Replacement Sheets containing Figure 16. Annotated Sheets Showing Changes are also attached. It is respectfully submitted that the sequences of Mi1.1 (SEQ ID NO: 7), Mi1.2 (SEQ ID NO: 9), and Rpi-blb2 (SEQ ID NO: 1) are disclosed in the Sequence Listing as originally filed and the parameters and scores employed for generating the sequence alignment are clearly recited in Figure 16 as originally filed. Therefore, the submission of the Replacement Sheets of Figure 16 does not introduce any new matter to the specification. Entry of the Replacement Sheets of drawings is respectfully requested.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 1, 2, and 4-6 are rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. In view of the present amendments, reconsideration and withdrawal of the rejections is respectfully requested.

The Examiner further rejects claim 7 for reciting the limitation “the sporulation index.” Claim 7 has been amended to correct the antecedent basis by deleting the article “the.” Furthermore, it is respectfully submitted that “sporulation index” is well defined in the specification at page 4, line 38 through page 5, line 4, and at page 101, Example 17. Reconsideration and withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 1-7 and 39 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement and for lack of an enabling disclosure. Applicants respectfully disagree and traverse the rejections in view of the present amendments.

Written Description Rejection

The Examiner alleges that the specification does not describe any species of the Rpi-blb2 protein encoding nucleic acids other than SEQ ID NO: 1, 3, 5, and 6 which encode SEQ ID NO: 2 or 4. To address this concern, Applicants have amended the claims without prejudice or disclaimer to recite the Rpi-blb2 protein encoding nucleic acids with more specificity based, in the broadest aspect, on percent identity to the recited sequences. For example, claim 1 has been amended to recite the Rpi-blb2 protein encoding nucleic acid based on the nucleotide sequence of SEQ ID NO: 3, 5, or 6, or the encoded amino acid sequence of SEQ ID NO: 2 or 4, and homologs (at least 82%) and biologically active portions of these sequences.

As acknowledged by the Examiner, the specification describes four nucleic acid molecules, SEQ ID NOs: 1, 3, 5, and 6, which encode the sequence of SEQ ID NO: 2 or 4 with anti-Oomycete activity (see Office Action at page 9), which constitutes a representative number of species within the claimed genus. Therefore, the claims as amended satisfy the written description requirement.

Furthermore, the specification discloses conserved structures of the Rpi-blb2 sequences. As provided in the specification at page 92, lines 26-36, and Figure 14, conserved domains of the Rpi-blb2 proteins include LZ, NBS, and LRR domains. Additionally, as discussed in the specification at pages 21-22, it is recognized in the art that at least NBS and LRR domains are common to genes associated with pathogen resistance. Thus, it is respectfully submitted that the specification provides the conserved structures common to members of the claimed genus of Rpi-blb2 proteins, which further satisfies the written description requirement. See also new claim 46.

Because the specification provides a representative number of species of the claimed genus and discloses conserved structure, it is respectfully submitted that the claims as amended satisfy the written description requirement. Reconsideration and withdrawal of the rejection is respectfully requested.

Enablement Rejections

The Examiner rejects the claims for lack of enablement, alleging that the specification enables only the use of the nucleic acid molecules encoding the sequence of SEQ ID NO: 2 or 4, but not any variants thereof. It is submitted that the more commensurate scope of the claims as amended overcomes these concerns. Reconsideration is respectfully requested.

The Examiner further argues that screening for substitutions or modifications is not routine and results of modifications are unpredictable, citing various references. Applicants respectfully disagree.

The specification provides detailed description including working examples on how to clone Rpi-blb2 proteins and how to carry out the claimed method. Furthermore, as discussed above, the specification provides four examples of the Rpi-blb2 proteins that would lead a skilled person to conclude that the method as claimed is operable with any Rpi-blb2 proteins. In view of the detailed description, guidance, working examples, and high level of skill, the specification enables the full scope of the claims without undue experimentation. On these facts, an analysis under *In re Wands* supports enablement. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988) (routine screening of hybridomas was not “undue experimentation;” the involved experimentation can be considerable, so long as “routine”).

Furthermore, one skilled in the art would recognize that screening and testing for Rpi-blb2 protein activity in cells of various plant species is routine and is not undue experimentation. As described in the specification, screening assays that permit one skilled artisan to identify, make, and use homologs and variants of a particular protein such as the Rpi-blb2 protein are routine and well known in the art at the time of filing. For instance, the specification at page 15, lines 16-30, describes that the Rpi-blb2 protein and homologs can be identified and/or isolated using art-recognized techniques such as PCR or hybridization. Furthermore, the specification at page 4, line 37 to page 5, line 4, describes that assays for testing resistance of a plant are well known in the art. Particularly, the resistance to *P. infestans* can be determined by the sporulation index as defined in Flier et al. (2001, cited in the specification) and as illustrated in Example 17 (at page 101) and Figure 18. Thus, it is respectfully submitted that screening assays such as the sporulation index, which is known in the art, can be routinely used by one skilled person to make and use the Rpi-blb2 proteins other than SEQ ID NO: 2 and 4 and biologically active portions thereof. No undue experimentation would be required.

Moreover, as described in the specification, the Rpi-blb2 proteins used in the claimed method may be prepared by introducing one or more nucleotide substitutions, additions or deletions into the nucleotide sequence SEQ ID NO: 3, 5, and 6, and screen the resultant mutants using the above-discussed screening assays to identify mutants that possess Rpi-blb2 activity.

See Specification at page 20, line 22 through page 21, line 7. For instance, such a substitution can be realized by conservative replacement of one amino acid with another amino acid having a property similar to that of the original amino acid. See Specification at page 20, lines 26-32. From this guidance, a person skilled in the art would be directed to mutations least likely to impair function. Methods of generating such mutations, for example, site-direct mutagenesis and PCT-mediated mutagenesis, are standard techniques readily available and known to those skilled in the art. The need for routine experimentation does not defeat enablement, since it is the quality and not the quantity of necessary experimentation which is relevant.

Thus, in view of the amendments, and further in view of the guidance provided in the specification, Applicants respectfully submit that the claims recite a scope of subject matter which a skilled artisan could clearly make and use according to the teaching in the specification.

Reconsideration and withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 102(b)/103(a)

Claims 1-2, 4-6, and 39 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ballova et al. ("Ballova"). Claim 7 is rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Ballova. The Examiner argues that R1 gene disclosed in Ballova meets the limitations set forth in claim 2. In light of the present amendments which define the Rpi-blb2 protein encoding nucleic acids with more specificities, it is believed that the rejection is rendered moot. Reconsideration is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 1-7 and 39 are further rejected under 35 U.S.C. § 103(a) as obvious over Ballova in view of Osusky et al. ("Osusky"). Applicants respectfully disagree and traverse the rejection.

Ballova discloses the cloning of R1 gene for potato resistance to late blight. The Examiner acknowledges that Ballova does not teach a further resistance protein and relies on Osusky for this teaching. The Examiner argues that the references, when combined, provide suggestion and motivation to generate a transgenic potato plants expressing both resistance proteins taught in Ballova and Osusky. Applicants respectfully disagree. However, in order to expedite prosecution, the claims have been amended without prejudice or disclaimer to specify

the particular nucleic acid molecules which encodes the Rpi-blb2 proteins. It is respectfully submitted that none of the references teaches or suggests the nucleic acid recited in the claimed method for generating or increasing anti-Oomycete activity in a plant.

Because all the claim limitations have not been taught or suggested by the references cited by the Examiner which is required to establish *prima facie* obviousness, it is respectfully submitted that Ballova and Osusky, alone or in combination, would not render the present invention obvious.

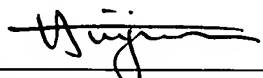
In view of the present amendments, Applicants respectfully request reconsideration and withdrawal of this rejection, and the allowance of the claims.

CONCLUSION

For at least the above reasons, Applicants respectfully request withdrawal of the rejections and allowance of the claims.

Accompanying this response is a petition for a three-month extension of time to and including October 24, 2007, to respond to the Office Action mailed April 24, 2007 with the required fee authorization, including the fee for extra claims. No further fees are believed due. If any additional fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13477-00002-US from which the undersigned is authorized to draw.

Respectfully submitted,

By 
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